

REMARKS

Claims 1 and 2 are in the application and stand rejected under 35 U.S.C. §112, second paragraph, under 35 U.S.C. §103(a) as being unpatentable over German Application No. DE 3841203 (Obermayer, et al.) in view of U.S. Patent No. 3,202,463 (Fatt). The comments made in the Office Action have been considered and, pursuant thereto, claim 2 has been canceled and the subject matter thereof has been combined with claim 1 in order to more clearly define Applicants' invention and to distinguish it over the cited references. Amendatory language is specifically added to amended claim 1 to overcome the rejection under 35 U.S.C. §112, second paragraph.

Moreover, in order to address particular objections raised by the Examiner against the drawings and the specification, Figure 3 of the drawings is amended by the addition of reference numeral 44 and the specification has been amended in order to address the Examiner's objections and to correct other minor language defects in the description of the invention.

As regards the rejection of the claims based upon prior art under 35 U.S.C. §103(a), it is submitted that the combination of the German reference with Fatt fails to teach or suggest Applicant's claimed invention, particularly as recited in claim 1, as amended. Specifically, as contrasted with the claimed invention, the seal of the German reference is a two part member and not a bar-shaped seal member having enlarged ends which are integrally formed on the seal member and received in correspondingly enlarged recesses formed on the engine parts for reception of the seal.

The deficiencies in the German reference as an anticipation of the claimed invention are not cured by Fatt because, although the seal member shown by Fatt contains enlarged ends, these ends are not received in enlarged recesses, but, instead, are simply compressed between the cylinder block flange and the oil pan flange on the engine body.

Moreover, claim 1, as amended, specifies the following structural features, which are clearly not disclosed in any of the cited references:

- (1) Enlarged recesses 87a for receiving the enlarged end portions integrally formed at opposite ends of the bar-shaped seal member 86 are provided only in first and second case halves of the crankcase.
- (2) A gasket 85 is interposed between the lower end face of the cylinder block 7 and cooperating end surfaces of the first and second case halves 6L and 6R to come into close contact with upper end faces of the enlarged end portions.
- (3) And, a T-shaped intersecting joint area among the cylinder head and the first and second case halves is sealed by the seal member and the gasket.

Owing to the seal structure according to the present invention having the above-described features, the number of elements for providing a seal at the T-shaped intersecting joint area among the cylinder block and first and second case halves of the crankcase can be advantageously reduced in that only one seal member and only one gasket can serve the desired sealing function. Additionally, the assembling process can be simplified while assuring a reliable seal thereat.

It should be particularly noted that enlarged end portions, which are integrally formed at opposite ends of a bar-shaped seal member, are accommodated in enlarged recesses provided only in the first and second case halves and can be deformed and filled sufficiently within the recesses so as to provide a tight seal thereat while being placed in close contact with a gasket that is interposed between the lower end face of the cylinder block and cooperating end surfaces of the first and second case halves.

Contrariwise, in the case of German Application No. 3841203A1 (Obermayer, et al.), as admitted by the Examiner, the seal member 6 disclosed therein has no enlarged end portions at its opposite ends but, instead, is assembled with another ring-like seal number 10 for providing a seal at the joint area among the cylinder block 4 and the crankcase halves 1. Furthermore, as shown best in Figure 4 of the reference, the opposite ends of the seal member 6 project into recesses 7 provided in the cylinder block 4 with spacing being provided between the bottom of each recess and the end of member 6. This indicates that an additional step and cost is required for providing such recesses 7 in the cylinder block. Moreover, as shown, a special spring 15 must be provided for urging the portion of the gasket 17 around the free end of seal member 6 against the lower surface of the cylinder block 4. Due to the spacing provided between the end of seal member 6 and cylinder block 4, it is evident that the seal member 6 tends to be deformed thereby making the seal provided by gasket 7 and seal ring 10 non-uniform and poor in regions about the seal member, except those limited areas that are pressed by the respective springs 15. In this regard, it should be further noted that the additional seal member 10 in the device of the German reference is used for providing a seal between the cylinder block and crankcase, contrary to the instant claimed invention.

As noted above, the secondary reference, Fatt, fails to cure the deficiencies of the German reference. Fatt shows no more than a seal structure 28, 32 between the bearing cap 19 coupled to the cylinder block 11 and the oil pan 13. Opposite ends of the seal have standing projections 35 that are compressed upon assembly between the flange 25 of bearing cap 19 and the saddle-shaped portion 15 formed on the cylinder block 11. A gasket 32 is used in the Fatt device to provide a seal between cylinder block 11 and bearing cap 19. As a result, there is no teaching or suggestion in Fatt of providing a seal at a T-shaped intersecting joint area between the cylinder block and a pair of crankcase halves, as required by the claim of the application.

From the foregoing, it is submitted that claim 1, as now amended, is clearly patentable over the cited references regardless of whether these references are considered individually or in combination.

Accordingly, the Examiner is respectfully requested for favorable consideration of this amendment and for allowance of the application.

If, for any reason, it is believed that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

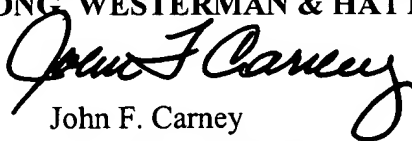
Attached hereto is a marked-up version of the changes made to the claims and specification by the current amendment. The attached page is captioned "**Version with markings to show changes made.**"

U.S. Patent Application Serial No. 09/901,566

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees, which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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PATENT TRADEMARK OFFICE

Enclosures: Version with markings to show changes made

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VERSION WITH MARKINGS TO SHOW CHANGES MADE 09/901,566

IN THE SPECIFICATION:

Please **AMEND** the specification as follows:

The paragraph beginning at page 7, line 16, through page 8, line 13, was replaced with the following rewritten paragraph.

As shown in Figs.3 and 6 to 8, a gasket 85 is interposed between joints of the cylinder block 7 and the first/second case halves 6L/6R. A bar-shaped seal member 86 is interposed between the first and second case halves 6L and 6R in the following manner: A U-shaped seal groove 87 is formed in one of the joints of first and second case halves 6L and 6R in order to extend along an inner peripheral surface of such one joint; and an enlarged recess 87a extending over the joints of the case halves 6L and 6R is formed to each of opposite ends of the seal groove 87 [on the side of] located facing the cylinder block 7. On the other hand, the seal member 86 is made of an elastomeric material[;], such as[, a] rubber, and has a bar-shaped portion circular in section. Enlarged end portions 86a, square in section, are formed at opposite ends of the seal member 86 to protrude perpendicularly sideways in opposite directions. The seal member 86 is fitted into the seal groove 87, while the bar-shaped portion is being bent into a U-shape, with the enlarged end portions 86a filled in the enlarged recesses 87a. In this case, it is effective for preventing the floating of an intermediate portion of the seal member 86 from the seal groove 87 to form a pair of small projections 88 on an inner surface of an intermediate portion of the seal groove 87 so that the projections 88 come into resilient contact with an outer peripheral surface of an intermediate area of the bar-shaped portion.

The paragraph beginning at page 9, line 17, through page 10, line 14, was replaced with the following rewritten paragraph:

The intake valve 18 and the exhaust valve 19 are urged to closing directions by valve springs 22 and 23 in a valve-operating cam chamber 21 defined in the cylinder head 8. In the valve-operating cam chamber 21, rocker arms 24 and 25 vertically swingably superposed on the cylinder head 8 are superposed on heads of the intake valve 18 and the exhaust valve 19. A cam shaft 26 for opening and closing the intake valve 18 and the exhaust valve 19 through the rocker arms 24, 25 are rotatably carried on laterally opposite sidewalls of the valve-operating cam chamber 21 in [a] parallel to the crankshaft 13 with ball bearings 27 and 27' interposed therebetween. One of the sidewalls of the valve-operating cam chamber 21, on which one of the ball bearings 27 is mounted, is formed integrally with the cylinder head 8; and an oil seal 28 is mounted on such one sidewall adjacent the outside of the ball bearing 27 to come into close contact with an outer peripheral surface of the cam shaft 26. An insertion hole 29 is provided in the other sidewall of the valve-operating cam chamber 21 to enable the insertion of the camshaft 26 into the chamber 21; and the other ball bearing 27' is mounted on a bearing cap 30 adapted to close the insertion hole 29 after insertion of the camshaft 26. The bearing cap 30 is fitted into the insertion hole 29 with a seal member 31 interposed therebetween, and is bolt-coupled to the cylinder head 8.

The paragraph beginning at page 13, line 16 through page 14, line 4, was replaced with the following rewritten paragraph:

An engine cover 51 covering the engine body 1 and accessories is divided at a location corresponding to the timing transmitting device 35 into a first cover half 51a on the side of the flywheel 43, and a second cover half 51b on the side of the starter 42. The first and second cover halves 51a and 51b are secured to the engine body 1. A frustoconical bearing holder 58 is arranged coaxially with the crankshaft 6 and secured to the first cover half 51a. The bearing holder [75] 58 supports the cutter C with a bearing 59 interposed therebetween to drive the cutter C to rotation, and an air intake port 52 is provided in the bearing holder [75] 58 so that the external air is introduced into the engine cover 51 with rotation of the cooling blades 45. A pedestal 54 is secured to the engine cover 51 and the bearing holder [75] 58 to cover a lower surface of the fuel tank 5.

The paragraph beginning at page 15, line 7, was replaced with the following rewritten paragraph:

The flywheel 43, larger in diameter than the centrifugal shoe 47 and having the cooling blades 45, is secured to the crankshaft 13 between the engine body 1 and the centrifugal shoe 47. Therefore, it is possible to draw in the external air through the air intake port 52 by the rotation of the cooling blades 45 to properly supply it around the cylinder block 7 and the cylinder head 8 without being obstructed by the centrifugal clutch [48] 49; thereby, enhancing the cooling of the cylinder block 7 and the cylinder head 8, while avoiding an increase in size of the engine E due to the flywheel 43 to the utmost.

IN THE CLAIMS:

Claim 2 was **CANCELLED**.

Claim 1 was **AMENDED** as follows:

1. (AMENDED) A seal structure in an engine body, comprising:

a crankcase which has a crank chamber and which is coupled to a lower end face of a cylinder block having a cylinder bore, the crankcase being comprised of first and second case halves having oppositely facing joint surfaces coupled to each other in a plane extending perpendicular to [joint surfaces] the lower end face of said cylinder block [and said crankcase], wherein one of the joint surfaces of said first and second case halves includes a U-shaped seal groove [to extend] extending along a peripheral edge of said crank chamber, and wherein enlarged recesses are provided only in the first and second case halves and [at] extend laterally from opposite ends of said seal groove [and] to be surrounded by the cylinder block and the first and second case halves; [and]

a bar-shaped seal member mounted in said seal groove to come into close contact with the other of said joint surfaces of the first and second case halves[,] such that enlarged end portions integrally formed at opposite ends of said bar-shaped seal member are filled in the enlarged recesses[.] ; and

a gasket interposed between the lower end face of said cylinder block and cooperating end surfaces on said first and second case halves to come into close contact with upper end faces of said enlarged end portions, whereby a T-shaped intersecting joint area among said cylinder block and said first and second case halves is sealed by said seal member and said gasket.